

What is claimed is:

1 1. A response calibration method, comprising:

2 coupling a stimulus signal having a non-zero bandwidth to a receiver through a signal
3 path;

4 acquiring a first digital representation of the stimulus signal at an output of the signal path
5 with the receiver adjusted to a first spectral position, and acquiring a second digital representation
6 of the stimulus signal at the output of the signal path with the receiver adjusted to a second
7 spectral position that is shifted from the first spectral position by a predetermined frequency
8 offset;

9 equating a frequency response of the receiver when the receiver is adjusted to the first
10 spectral position to the frequency response of the receiver when the receiver is adjusted to the
11 second spectral position, extracting a first combined frequency response of the receiver and the
12 signal path at at least three predesignated frequencies within the non-zero bandwidth of the
13 stimulus signal, extracting a second combined frequency response of the receiver and the signal
14 path at a set of frequencies within the non-zero bandwidth of the stimulus signal offset from the
15 at least three predesignated frequencies by the predetermined frequency offset, and determining
16 the frequency response of the receiver from the first combined frequency response and the second
17 combined frequency response.

1 2. The method of claim 1 wherein extracting the first combined frequency response of
2 the receiver and the signal path includes normalizing the first digital representation by the
3 stimulus signal at the at least three predesignated frequencies and wherein extracting the second
4 combined frequency response of the receiver and the signal path includes normalizing the second
5 digital representation by the stimulus signal at the set of frequencies.

1 3. The method of claim 1 wherein extracting the first combined frequency response of
2 the receiver includes adaptive filtering the first digital representation and extracting the second
3 combined frequency response of the receiver includes adaptive filtering the second digital
4 representation.

1 4. The method of claim 1 wherein determining the frequency response (G_k) of the
2 receiver from the first combined frequency response (X_{1k}) and the second combined frequency
3 response (X_{2k}) includes designating a frequency response of the signal path at a predetermined
4 frequency of one of the at least three predesignated frequencies and the set of frequencies within
5 the bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X_{1k} = G_k H_k$ and a second equation $X_{2k} = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.

1 5. The method of claim 2 wherein determining the frequency response (G_k) of the
2 receiver from the first combined frequency response ($X1_k$) and the second combined frequency
3 response ($X2_k$) includes designating a response of the signal path at a predetermined frequency
4 of one of the at least three predesignated frequencies and the set of frequencies within the
5 bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X1_k = G_k H_k$ and a second equation $X2_k = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.

1 6. The method of claim 3 wherein determining the frequency response (G_k) of the
2 receiver from the first combined frequency response ($X1_k$) and the second combined frequency
3 response ($X2_k$) includes designating a response of the signal path at a predetermined frequency
4 of one of the at least three predesignated frequencies and the set of frequencies within the
5 bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X1_k = G_k H_k$ and a second equation $X2_k = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.

1 7. The method of claim 1 further comprising determining the frequency response (H_k)
2 of the signal path from the first combined frequency response ($X1_k$) and the second combined
3 frequency response ($X2_k$) by designating a response of the signal path at a predetermined
4 frequency of one of the at least three predesignated frequencies and the set of frequencies within
5 the bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X1_k = G_k H_k$ and a second equation $X2_k = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.

1 8. The method of claim 2 further comprising determining the frequency response (H_k)
2 of the signal path from the first combined frequency response (X_{1k}) and the second combined
3 frequency response (X_{2k}) by designating a response of the signal path at a predetermined
4 frequency of one of the at least three predesignated frequencies and the set of frequencies within
5 the bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X_{1k} = G_k H_k$ and a second equation $X_{2k} = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.

1 9. The method of claim 3 further comprising determining the frequency response (H_k)
2 of the signal path from the first combined frequency response (X_{1k}) and the second combined
3 frequency response (X_{2k}) by designating a response of the signal path at a predetermined
4 frequency of one of the at least three predesignated frequencies and the set of frequencies within
5 the bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X_{1k} = G_k H_k$ and a second equation $X_{2k} = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.

1 10. The method of claim 4 further comprising determining the frequency response (H_k)
2 of the signal path from the first combined frequency response (X_{1k}) and the second combined
3 frequency response (X_{2k}) by designating a response of the signal path at a predetermined
4 frequency of one of the at least three predesignated frequencies and the set of frequencies within
5 the bandwidth of the stimulus signal, and solving for the frequency response (G_k) of the receiver
6 using a first equation $X_{1k} = G_k H_k$ and a second equation $X_{2k} = G_k H_{k+1}$, wherein k is an integer
7 that indexes the at least three designated frequencies.